



## SEQUENCE LISTING

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<120> HIV-1 VACCINES AND SCREENING METHODS  
THEREFOR

<130> 2570-1-001N

<140> 09/891,609

<141> 2001-06-26

<150> 60/214,608

<151> 2000-06-27

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1941

<212> DNA

<213> Human immunodeficiency virus type 1

<400> 1

aaatctctgg atcagatttgc aataacatgc acctggatgg agtgggagag agaaaattgac 1800  
aattacacaa acttaatata caccttaattt gaagaatcgc agaaccaaca agaaaaagaat 1860  
gaacaagaat tattagaattt ggataagtgg gcaagtttgtt ggaattgggt tgacatatca 1920  
aatggctgtt ggtatataaa a 1941

<210> 2  
<211> 646  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 2  
Met Arg Val Lys Gly Ile Arg Lys Asn Tyr Gln His Leu Trp Arg Gly  
1 5 10 15  
Gly Thr Leu Leu Leu Gly Met Leu Met Ile Cys Ser Ala Val Glu Lys  
20 25 30  
Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr  
35 40 45  
Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val  
50 55 60  
His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro  
65 70 75 80  
Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys  
85 90 95  
Asn Asn Met Val Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp  
100 105 110  
Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu  
115 120 125  
His Cys Thr Asn Leu Lys Asn Ala Thr Asn Thr Lys Ser Ser Asn Trp  
130 135 140  
Lys Glu Met Asp Arg Gly Glu Ile Lys Asn Cys Ser Phe Lys Val Gly  
145 150 155 160  
Ala Gly Lys Leu Ile Asn Cys Asn Thr Ser Val Ile Thr Gln Ala Cys  
165 170 175  
Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala  
180 185 190  
Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys Phe Asn Gly Ser Gly  
195 200 205  
Pro Cys Thr Asn Val Ser Thr Val Gln Cys Thr His Gly Ile Arg Pro  
210 215 220  
Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser Leu Ala Glu Glu Gly  
225 230 235 240  
Val Val Ile Arg Ser Glu Asn Phe Thr Asp Asn Ala Lys Thr Ile Ile  
245 250 255  
Val Gln Leu Lys Glu Ser Val Glu Ile Asn Cys Thr Arg Pro Asn Asn  
260 265 270  
Asn Thr Arg Lys Ser Ile Thr Ile Gly Pro Gly Arg Ala Phe Tyr Ala  
275 280 285  
Thr Gly Asp Ile Ile Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser  
290 295 300  
Gly Glu Lys Trp Asn Asn Thr Leu Lys Gln Ile Val Thr Lys Leu Gln  
305 310 315 320  
Ala Gln Phe Gly Asn Lys Thr Ile Val Phe Lys Gln Ser Ser Gly Gly  
325 330 335  
Asp Pro Glu Ile Val Met His Ser Phe Asn Cys Gly Gly Glu Phe Phe  
340 345 350  
Tyr Cys Asn Ser Thr Gln Leu Phe Asn Ser Thr Trp Asn Asn Thr Ile  
355 360 365

Gly Pro Asn Asn Thr Asn Gly Thr Ile Thr Leu Pro Cys Arg Ile Lys  
 370 375 380  
 Gln Ile Ile Asn Arg Trp Gln Glu Val Gly Lys Ala Met Tyr Ala Pro  
 385 390 395 400  
 Pro Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn Ile Thr Gly Leu Leu  
 405 410 415  
 Leu Thr Arg Asp Gly Gly Lys Glu Ile Ser Asn Thr Thr Glu Ile Phe  
 420 425 430  
 Arg Pro Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr  
 435 440 445  
 Lys Tyr Lys Val Val Lys Ile Glu Pro Leu Gly Val Ala Pro Thr Lys  
 450 455 460  
 Ala Lys Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Thr Leu Gly  
 465 470 475 480  
 Ala Met Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala  
 485 490 495  
 Arg Ser Leu Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile  
 500 505 510  
 Val Gln Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His  
 515 520 525  
 Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Leu Gln Ala Arg Val Leu  
 530 535 540  
 Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly  
 545 550 555 560  
 Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ala Ser  
 565 570 575  
 Trp Ser Asn Lys Ser Leu Asp Gln Ile Trp Asn Asn Met Thr Trp Met  
 580 585 590  
 Glu Trp Glu Arg Glu Ile Asp Asn Tyr Thr Asn Leu Ile Tyr Thr Leu  
 595 600 605  
 Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu  
 610 615 620  
 Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp Phe Asp Ile Ser Lys  
 625 630 635 640  
 Trp Leu Trp Tyr Ile Lys  
 645

<210> 3  
 <211> 1860  
 <212> DNA  
 <213> Human immunodeficiency virus type 1

<400> 3  
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 accaccactc tattttgtgc attagatgct aaagcttatg acacagaggt acataatgtc 120  
 tggcccacac atgcctgtgt acccacagac cctaaccac aagaaaatagt attggaaaat 180  
 gtgacagaaa atttaacat gtggaaaaat aacatggtag aacagatgca tgaggatata 240  
 atcagtttat gggatcaaag tctaaagcca tgtgtaaaagt taacccact ctgtgttact 300  
 ctacattgca ctaatttcaa gaatgtact aataccaaga gtagtaattg gaaagagatg 360  
 gacagaggag aaataaaaaa ttgcttttc aaggcggag ctggaaaatt gataaattgt 420  
 aacacctcag tcattacaca ggcctgtcca aaggtatcct ttgaaccaat tcccatat 480  
 tattgtgccc cggctgttt tgcgattcta aagtgtaatg ataagaaggtaatgca 540  
 ggaccatgtca caaatgtcag cacagtacaa tgtacacatg gaattaggcc agtagtgtca 600  
 actcaattgc tgttaaatgg cagtctagca gaagaagggg tagtaatttag atctgaaaat 660  
 ttcacagaca atgctaaaac tataatagta cagctgaagg aatctgtaga aattaattgt 720  
 acaagaccta acaataatac aagaaaaagt ataactatag gaccggggag agcattttat 780

gcaacaggag acataataagg agatataaga caagcacatt gtaacattag tggagaaaaa 840  
tggaaaaca cttaaaaca gatagttaca aaattacaag cacaatttg gaataaaaaca 900  
atagtctta agcaatccctc aggaggggac ccagaaatttga taatgcacag tttaattgt 960  
ggaggggaat tttctactg taattcaaca cagctttta atagtacttga gaataataact 1020  
atagggccaa ataacactaa tggaactatac acactcccat gcagaataaaa acaaattata 1080  
aacaggtggc aggaagtagg aaaagcaatg tatgcccctc ccatcagagg acaaattaga 1140  
tgctcatcaa atattacagg actgcttata acaagagatg gtggtaaaga gatcagtaac 1200  
accaccgaga tcttcagacc tgaggtgga gatatgaggg acaattggag aagtgaatta 1260  
tataaatata aagtagtaaa aattgagcca ttaggatgtag cacccaccaa ggcaaagaga 1320  
agagtggtgc agagagaaaa aagagcagtg acgctaggag ctatgttcccttgg 1380  
ggagcagcag gaagcactat gggcgcacgg tcactgacgc tgacggtaca ggccagacaa 1440  
ttattgtctg gtatagtgc acacgagaac aatttgcgtg gagctattga ggcgcaacag 1500  
catctgttgc aactcacagt ctggggcata aagcagctcc aggcaagagt cctggctgtg 1560  
gaaagatacc taaaggatca acagctcta gggatttggg gttgctctgg aaaactcatt 1620  
tgccaccactg ctgtgccttgg 1680  
aataacatga cctggatgga gtggagaga gaaattgaca attacacaaa cttaatatac 1740  
acctaatttgg aagaatcgca gaaccaacaa gaaaagaatg aacaagaattt attagaattt 1800  
gataagtggg caagttgtg 1860  
gaattggttt gacatatcaa aatggctgtg gtatataaaa

<210> 4  
<211> 619  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 4  
Ser Ala Val Glu Lys Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val  
1 5 10 15  
Trp Lys Glu Ala Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala  
20 25 30  
Tyr Asp Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro  
35 40 45  
Thr Asp Pro Asn Pro Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn  
50 55 60  
Phe Asn Met Trp Lys Asn Asn Met Val Glu Gln Met His Glu Asp Ile  
65 70 75 80  
Ile Ser Leu Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro  
85 90 95  
Leu Cys Val Thr Leu His Cys Thr Asn Leu Lys Asn Ala Thr Asn Thr  
100 105 110  
Lys Ser Ser Asn Trp Lys Glu Met Asp Arg Gly Glu Ile Lys Asn Cys  
115 120 125  
Ser Phe Lys Val Gly Ala Gly Lys Leu Ile Asn Cys Asn Thr Ser Val  
130 135 140  
Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His  
145 150 155 160  
Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys Lys  
165 170 175  
Phe Asn Gly Ser Gly Pro Cys Thr Asn Val Ser Thr Val Gln Cys Thr  
180 185 190  
His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Asn Gly Ser  
195 200 205  
Leu Ala Glu Glu Gly Val Val Ile Arg Ser Glu Asn Phe Thr Asp Asn  
210 215 220  
Ala Lys Thr Ile Ile Val Gln Leu Lys Glu Ser Val Glu Ile Asn Cys  
225 230 235 240  
Thr Arg Pro Asn Asn Asn Thr Arg Lys Ser Ile Thr Ile Gly Pro Gly

245	250	255
Arg Ala Phe Tyr Ala Thr Gly Asp Ile Ile Gly Asp Ile Arg Gln Ala		
260	265	270
His Cys Asn Ile Ser Gly Glu Lys Trp Asn Asn Thr Leu Lys Gln Ile		
275	280	285
Val Thr Lys Leu Gln Ala Gln Phe Gly Asn Lys Thr Ile Val Phe Lys		
290	295	300
Gln Ser Ser Gly Gly Asp Pro Glu Ile Val Met His Ser Phe Asn Cys		
305	310	315
Gly Gly Glu Phe Phe Tyr Cys Asn Ser Thr Gln Leu Phe Asn Ser Thr		
325	330	335
Trp Asn Asn Thr Ile Gly Pro Asn Asn Thr Asn Gly Thr Ile Thr Leu		
340	345	350
Pro Cys Arg Ile Lys Gln Ile Ile Asn Arg Trp Gln Glu Val Gly Lys		
355	360	365
Ala Met Tyr Ala Pro Pro Ile Arg Gly Gln Ile Arg Cys Ser Ser Asn		
370	375	380
Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly Lys Glu Ile Ser Asn		
385	390	395
Thr Thr Glu Ile Phe Arg Pro Gly Gly Asp Met Arg Asp Asn Trp		
405	410	415
Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys Ile Glu Pro Leu Gly		
420	425	430
Val Ala Pro Thr Lys Ala Lys Arg Arg Val Val Gln Arg Glu Lys Arg		
435	440	445
Ala Val Thr Leu Gly Ala Met Phe Leu Gly Phe Leu Gly Ala Ala Gly		
450	455	460
Ser Thr Met Gly Ala Arg Ser Leu Thr Leu Thr Val Gln Ala Arg Gln		
465	470	475
Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala Ile		
485	490	495
Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Leu		
500	505	510
Gln Ala Arg Val Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln Gln Leu		
515	520	525
Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val		
530	535	540
Pro Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Asp Gln Ile Trp Asn		
545	550	555
Asn Met Thr Trp Met Glu Trp Glu Arg Glu Ile Asp Asn Tyr Thr Asn		
565	570	575
Leu Ile Tyr Thr Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu Lys Asn		
580	585	590
Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp Asn Trp		
595	600	605
Phe Asp Ile Ser Lys Trp Leu Trp Tyr Ile Lys		
610	615	